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CASE REPORT

Coronary Sinus Diverticulum and Accessory Pathway

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KEY WORDS: *accessory pathway;
preexcitation syndrome; coronary
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tachycardia*

ABSTRACT

A rare case of coronary sinus diverticulum is herein presented in a patient with classical Wolff-Parkinson-White syndrome undergoing catheter ablation of a posteroseptal accessory pathway. Only after a coronary venous angiogram was performed was the location of the accessory pathway identified and successfully ablated.

INTRODUCTION

Although ECG criteria can localize an accessory pathway, the presence of congenital anomalies like a coronary sinus diverticulum may complicate the matter.¹⁻³ The epicardial location of such pathways can only be uncovered via coronary venous angiography. We present herein such a case in a patient presenting with symptomatic Wolff-Parkinson-White syndrome.

CASE REPORT

A 30-year-old man with a long history of palpitations and multiple visits to the emergency room for supraventricular arrhythmias treated with intravenous adenosine, was referred for radiofrequency ablation. The 12-lead ECG (Fig. 1) showed manifest preexcitation consistent with a left posteroseptal accessory pathway. A 24-hour Holter monitor and event recorders showed episodes of narrow complex tachycardia. An echocardiography study was unrevealing. The patient had been receiving atenolol 50 mg po qd.

During the electrophysiology study a narrow-complex tachycardia was easily inducible (Fig. 2), and the intracardiac recordings were consistent with orthodromic atrioventricular reentrant tachycardia (AVRT) with retrograde conduction via a postero-septal accessory pathway (earliest atrial activation at the proximal coronary sinus-CS). Intracardiac recordings were also consistent with a posteroseptal accessory pathway with earliest ventricular activation also at the proximal CS catheter (Fig. 3). However, the precise location became apparent only after a coronary sinus venogram was performed (Fig. 4).

ABBREVIATIONS

AV = atrioventricular
AVRT = atrioventricular reentrant
tachycardia
CS = coronary sinus
WPW = Wolff-Parkinson-White
(syndrome)

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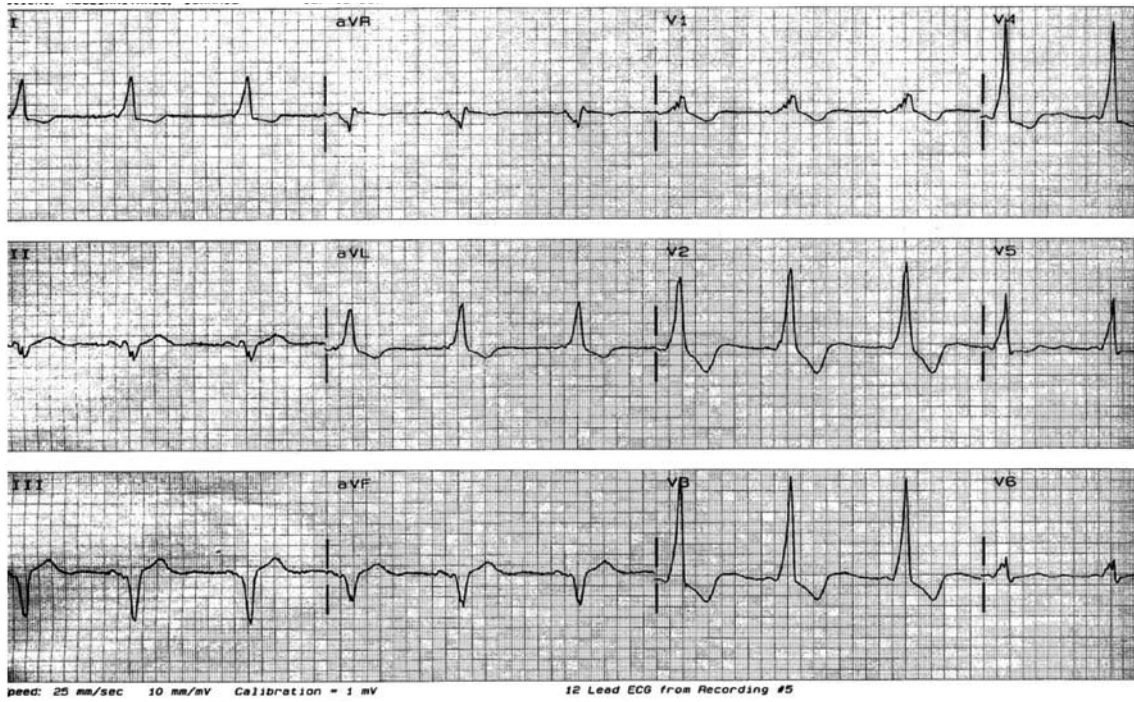


FIGURE 1. Patient's 12-lead ECG showing classical signs of pre-excitation (Wolff-Parkinson-White syndrome) indicating a left posteroseptal accessory pathway.

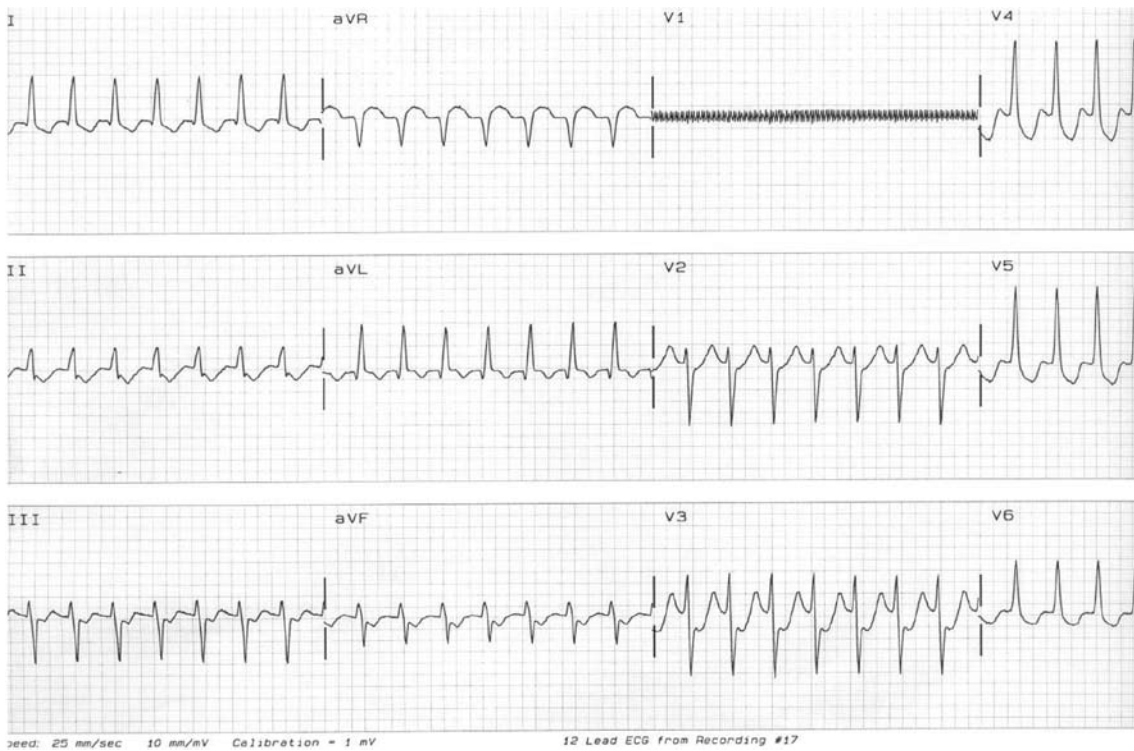


FIGURE 2. 12-lead ECG of the induced orthodromic AVRT.

CS DIVERTICULUM AND WPW SYNDROME

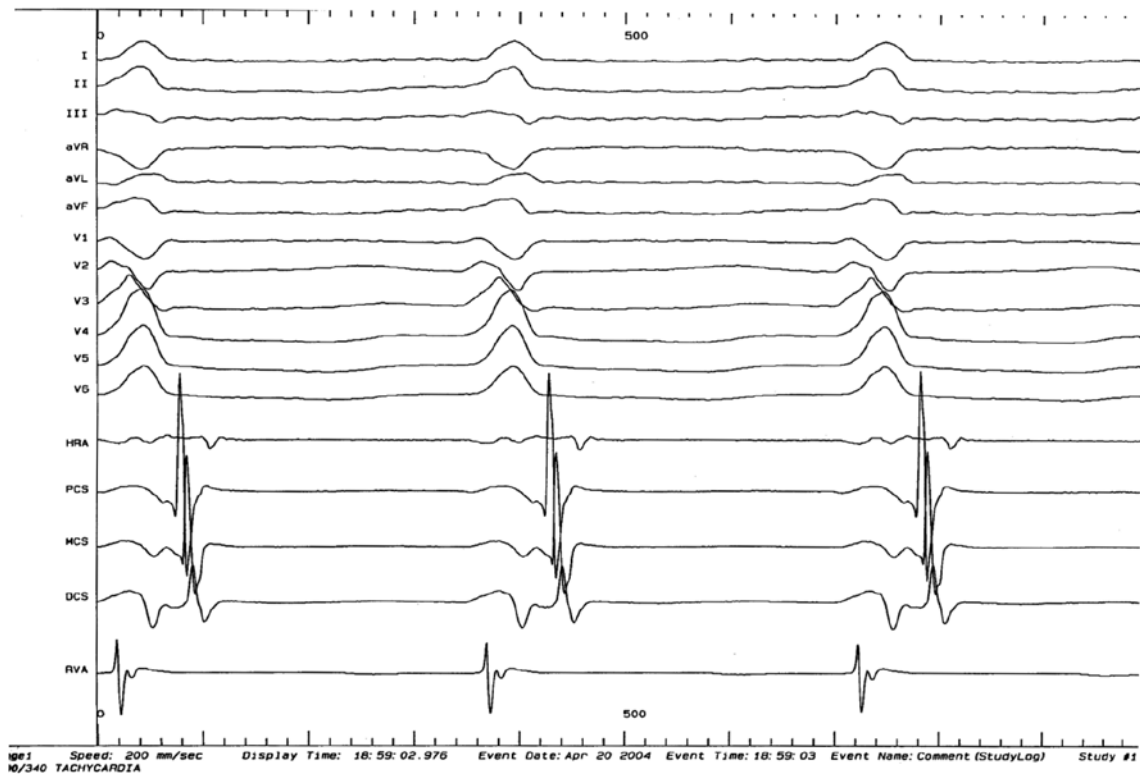


FIGURE 3. Intracardiac recording during sinus rhythm indicating shortest AV interval at the proximal CS catheter.

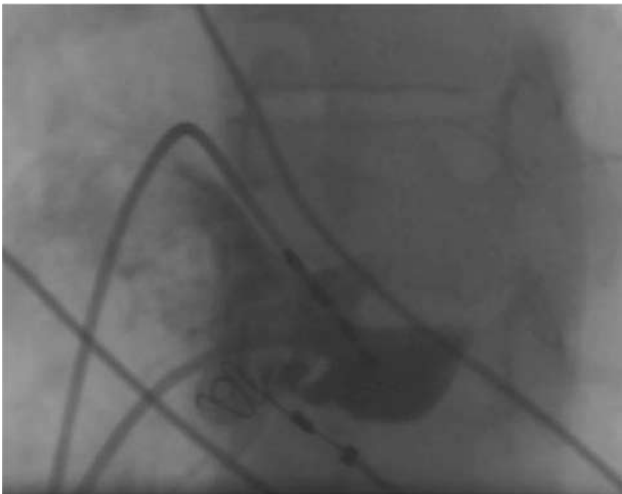


FIGURE 4. Coronary sinus (CS) venography revealing a large CS diverticulum.

DISCUSSION

Postero-septal accessory pathways account for ~25% of all accessory pathways. In 65% of cases they are accessible within the right atrial chamber and in 20-25% of cases from the left ventricle. In 10-12% of patients the accessory pathways are located within the coronary sinus. Approximately in 2% of cases, pathways can be found in coronary sinus diverticuli at the edge of their origin.¹⁻⁶ Earliest retrograde atrial activation could be found in multiple sites. Delivery of low energy lesions <30W is recommended to avoid complications with rupture of venous structures and hemopericardium. Success rates of radiofrequency catheter ablation are high around 95%.

In the present case the surface ECG was consistent with a left-sided posteroseptal accessory pathway. However, attempts to ablate this pathway via either a right or left endocardial approach would be bound to fail, since this type of accessory pathway has its location at the muscle connections at the neck of the CS diverticulum. Unless one performs a coronary venous angiogram to uncover the diverticulum, a classical approach to ablate the pathway will certainly fail.

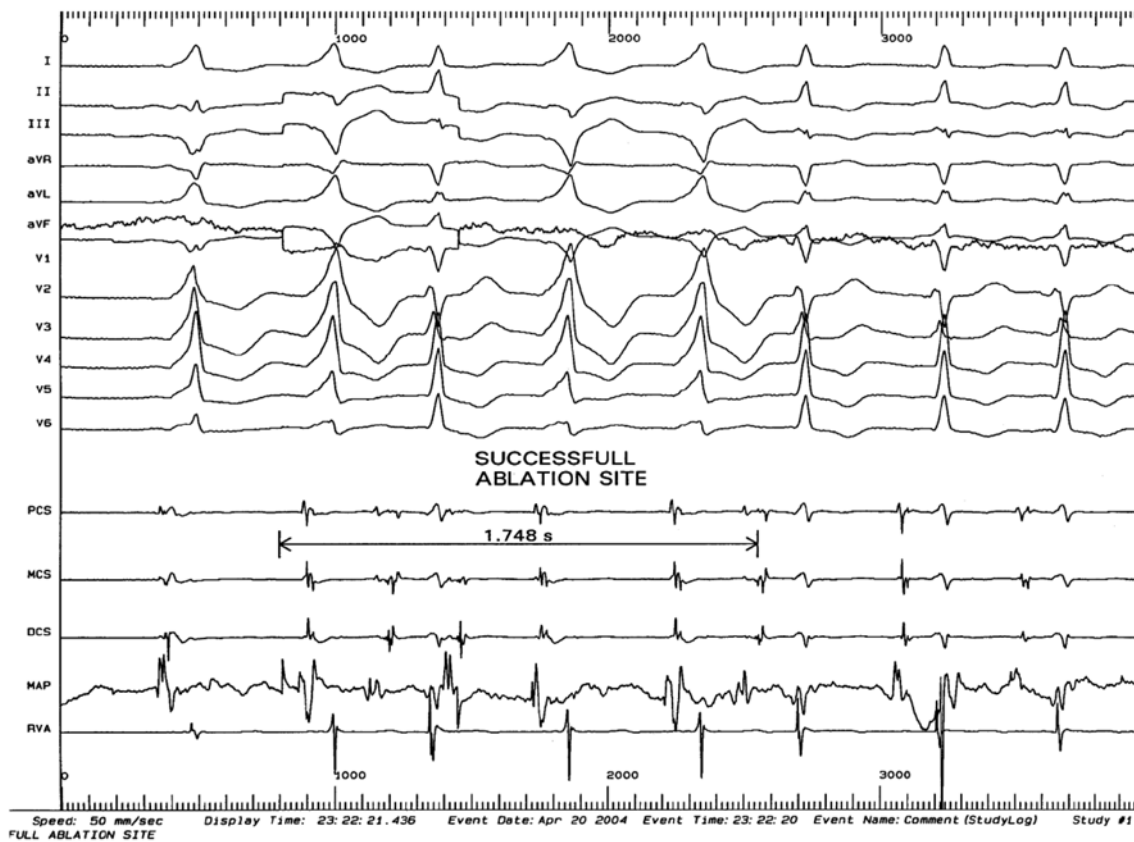


FIGURE 5. The successful ablation site was located at the neck of the CS diverticulum.

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